DATA I/O

PinSite

User Manual

DATA I/O Corporation

981-0083-003

February 1991 981-0083-003

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Preface

The Preface contains details about telephone support, repair service, warranty and update services, the Bulletin Board Service, typographic conventions and more.

Customer Support Offices

United States

For technical assistance, contact:

Data I/O Customer Resource Center
Telephone: 800 247-5700
Fax: 206 882-1043

For repair, warranty service, or update service, contact your nearest Data I/O Service Center below:

Data I/O Redmond
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA 98073-9746
Telephone: 206 881-6444
Fax: 206 882-1043
Telex: 152167

Data I/O San Jose
1701 Fox Drive
San Jose, CA 95131
Telephone: 408 437-9600
Fax: 408 437-1218

Data I/O New Hampshire
20 Cotton Road
Nashua, NH 03063
Telephone: 603 889-8511
800 858-5803 (NJ & NY only)
Fax: 603 880-0697

Canada

For technical assistance, contact:

Data I/O Customer Resource Center
Telephone: 800 247-5700
Fax: 206 882-1043

For repair, warranty service, or update service, contact:

Data I/O Canada
6725 Airport Road, Suite 302
Mississauga, Ontario
L4V 1V2 Canada
Telephone: 416 678-0761
Fax: 416 678-7306

Japan

For technical assistance, repair, warranty service, or update service, contact:

Data I/O Japan
Sumitomoseimei Higashishinbashi Bldg. 8F
2-1-7, Higashi-Shinbashi
Minato-Ku, Tokyo 105, Japan
Telephone: 03 3432-6991
Fax: 03 3432-6094 (Sales)
03 3432-6093 (Other)
Telex: 2522685 DATAIO J

Germany

For technical assistance, repair, warranty service, or update service, contact:

Data I/O-Instrumatic Electronic Systems Vertriebs GmbH
Lochhammer Schlag 5a
D-8032 Gräfelfing
Germany
Telephone: 089 858580
Fax: 089 8585810

Other European Countries

For technical assistance, repair, warranty service, or update service, contact the office below and ask for the number of your local Data I/O representative:

Data I/O Europe
World Trade Center
Strawinskylaan 633
1077 XX Amsterdam, The Netherlands
Telephone: +31 (0)20 6622866
Fax: +31 (0)20 6624427

Other Countries Worldwide

For technical assistance, repair, warranty service, or update service, contact the office below and ask for the number of your local Data I/O representative:

Data I/O Intercontinental
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA USA 98073-9746
Telephone: 206 881-6444
Fax: 206 882-1043
Telex: 4740166

Technical Assistance

To help us provide quick and accurate assistance, please be at your programmer or computer when you call, and have the following ready:

- Product version number
- Product serial number (if available)
- Detailed description of the problem you are experiencing
- Error messages (if any)
- Device manufacturer and part number (if device-related)
- Product manual

For technical assistance, contact the appropriate Customer Support office listed at the front of the Preface.

Warranty Service

Data I/O Corporation warrants its products against defects in materials and workmanship for a period of ninety (90) days for software and one (1) year for hardware unless specified otherwise. The warranty begins when the product is shipped.

Data I/O maintains customer service offices throughout the world, each staffed with factory-trained technicians to provide prompt, quality service. For warranty service, contact the appropriate Customer Support office listed at the front of the Preface.

Update Service

DataI/O Customer Support is committed to providing you with the support programs you need to keep your Data I/O products in optimum operating condition and up-to-date with the latest, state-of-the-art capabilities.

For more information, or to order a Service Agreement or Update Agreement, contact the appropriate Customer Support office listed at the front of the Preface.

Bulletin Board Service

From the Customer Support Bulletin Board Service (BBS) you can obtain a wide range of information on Data I/O products, including current product information, new revision information, known bugs (and work-arounds), helpful application notes, and other miscellaneous information. In addition, the BBS has a collection of DOS utilities you can download.

Also, the Customer Support BBS message facility allows you to leave messages for Customer Support personnel. For example, you could request support for a specific device or suggest how we can improve our products.

To learn more about the U.S. Customer Support BBS, call it at 206 882-3211. The protocol is 1200/2400/9600 (Courier HST) baud, 8 data bits, 1 stop bit, and no parity. Online help files throughout the BBS help you learn more about the BBS.

For your nearest Bulletin Board Service outside the U.S., contact the appropriate Customer Support office listed at the front of the Preface.

End User Registration and Address Change

If the end user for this product or your address has changed since the Registration Card was mailed, please notify your nearest Customer Support office as listed at the front of the Preface. This ensures that you receive information about product enhancements. Be sure to include the product serial number, if available.

Typographic Conventions

Throughout this manual different typographic conventions represent different cases of input and output.

Keyboard Keys

Keyboard keys may be shown in boxes (for example, [Q]) or as bolded text.

The **Enter** key (or on some keyboards, the **Return** key) is represented by this symbol: [↵] .

Key Combinations

Key combinations, such as **Control-Z**, are shown as two key boxes separated by a dash; for example, [Ctrl] – [Z] .

A key combination like [Esc] [Ctrl] – [T] means to press and release [Esc] , then press [Ctrl] and [T] at the same time.

Variable Input

Variable input is italicized and should be replaced with the requested information. For example, enter **copy** ***filename.hex*** means type copy just as you see it and replace ***filename.hex*** with the name of your file.

Optional Input

Optional items of a command are shown in brackets; for example

[*option1*] [*option2*]...[*optionn*]

Items separated by a vertical bar (for example, OR | OR | ...) are mutually exclusive; that is, only one of the options listed can be specified.

Displayed Messages

Text that appears on the screen will be displayed in a typewriter-like typeface; for example,

```
You will see this text displayed on the screen.
```

1 Introduction

Data I/O's PinSite™ Programming Module and appropriate package-specific base, in conjunction with Data I/O's UniSite™ programmer and the necessary pin-driver boards, allows you to program surface mount package type devices including SOIC, LCC, PLCC, and Pin Grid Array (PGA) devices. The standard PinSite will program devices with up to 84 pins. The device list shipped with each UniSite software update shows a complete list of supported devices. Devices programmable with PinSite are listed in the Product Module column on the device list.

If you have never used UniSite, read through the sample sessions of the *UniSite User Manual*. The procedures and explanations in the PinSite manual assume at least a working knowledge of how UniSite operates.

Package Contents

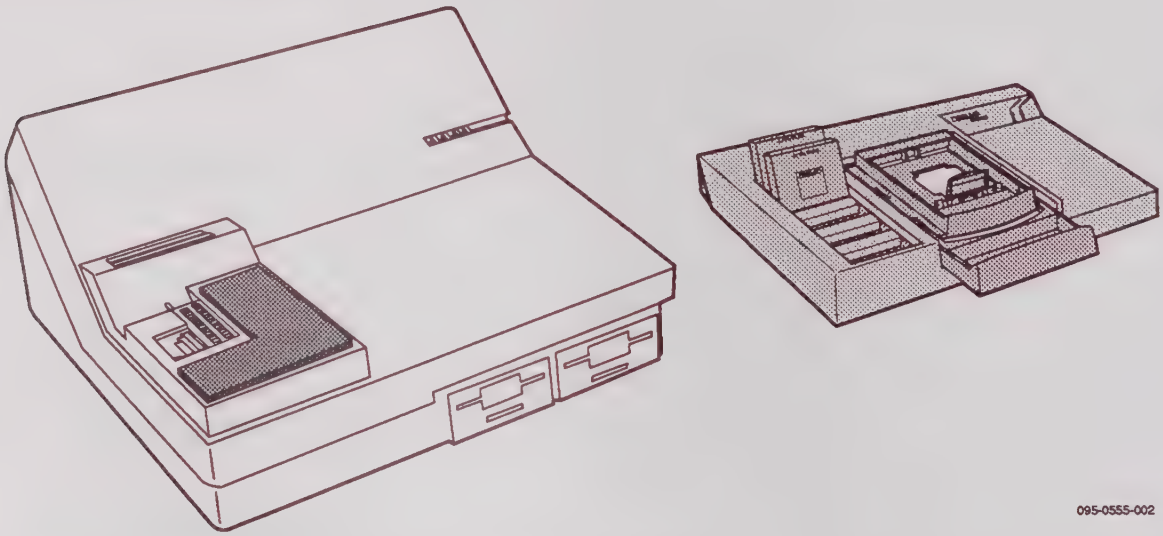
When you receive your PinSite Module, check the contents of the shipping container to be sure that everything you ordered is included. At a minimum, when you order the PinSite Module, you should receive:

- PinSite Manual (981-0083)
- 84-pin PinSite Module (950-0142)
- PLCC Base (715-2041)
- PLCC MatchBook™ Set
- MatchBook Storage Box

Configuration

The PinSite module can program all surface mount devices. Figure 1-1 shows the UniSite and the PinSite module. There are several configuration options available which are described in the following paragraphs.

Figure 1-1
PinSite Module and UniSite



095-0555-002

PinSite Module

The standard PinSite module consists of one internal circuit board and will program parts with up to 84 pins (950-0148-001).

Base Options

The PinSite Module is shipped with the PLCC base as the standard configuration; the other bases are available as options.

- PLCC Base — This base is installed in the PinSite Module and contains Matchbooks for PLCC devices from 20 to 84 pins.
- LCC Base — This base option is installed in the PinSite Module and contains Matchbooks for LCC devices from 20 to 84 pins.
- PGA Base — This base option is installed in the PinSite Module and contains a 15 x 15 universal Pin Grid socket. With this Base you can program PGA devices from 44 pins to 84 pins.
- SOIC Base — This base option is installed in the PinSite module and can program SOICs with leads on .050 inch centers up to 32 pins.

Compatibility

Whether or not PinSite is compatible with your UniSite depends on your memory requirements and on the version of UniSite software you are using. The PinSite module is fully compatible with any UniSite using a V3.2 (or later) system disk. If you are using SetSite, PinSite, or ChipSite, and the part number of your UniSite is 901-0058-007 or less, we recommend that you update your UniSite. This update is part of the standard warranty and is required to assure that PinSite will operate properly with all devices.

If you need to check the current configuration of your UniSite, remember that both the RAM size and software configurations appear on the upper-right portion of most of the UniSite screens.

Pin Driver Requirements

PinSite requires a minimum number of pin driver boards for programming specific device packages. The following table details the minimum number of pin driver boards necessary to program PLCC, LCC, SOIC, and PGA devices.

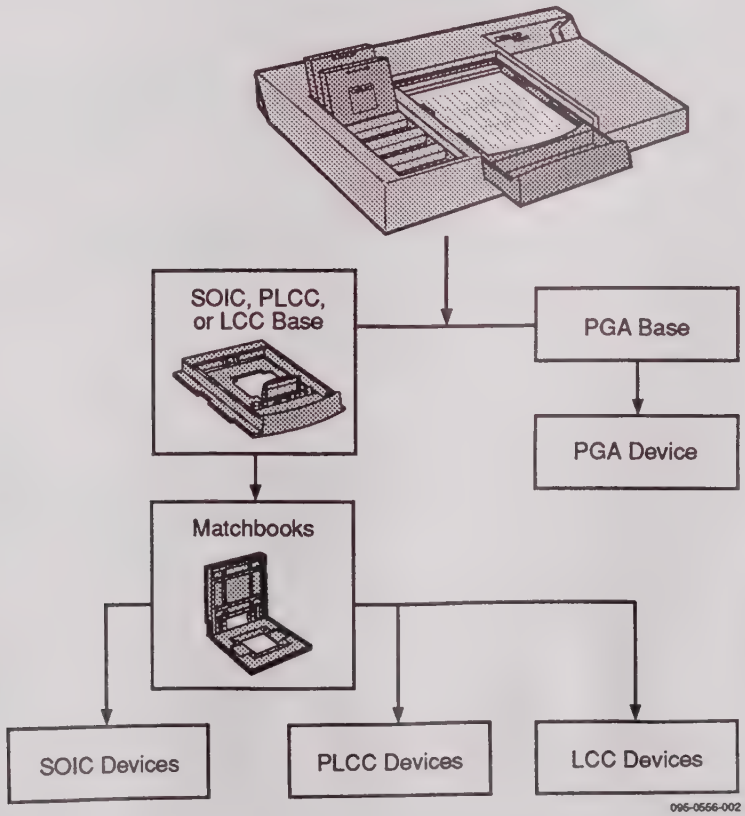
Minimum Number of Pin Drivers Needed

Package Type	Number of Pins	Number of Pin Driver Boards
PLCC and LCC	20	7
PLCC and LCC	28	7
PLCC and LCC	32	8
PLCC and LCC	44	11
PLCC and LCC	48	12
PLCC	52	13
PLCC and LCC	68	17
PLCC and LCC	84	17
SOIC	8	7
SOIC	14	7
SOIC	16	7
SOIC	18	7
SOIC	20	7
SOIC	24	7
SOIC	28	7
SOIC	32	8
PGA	44	17
PGA	68	17
PGA	84	17

2 Installation

This chapter describes the various PinSite and Base installation possibilities, depending on what Base and device package type you will be using. Before continuing with the PinSite installation procedures, make sure you have correctly set up your UniSite as described in the *UniSite User Manual*. Figure 2-1 shows the relationship between the PinSite Module, the Bases, the MatchBooks, and the devices.

Figure 2-1
Installation Flow Chart



PinSite Module into UniSite

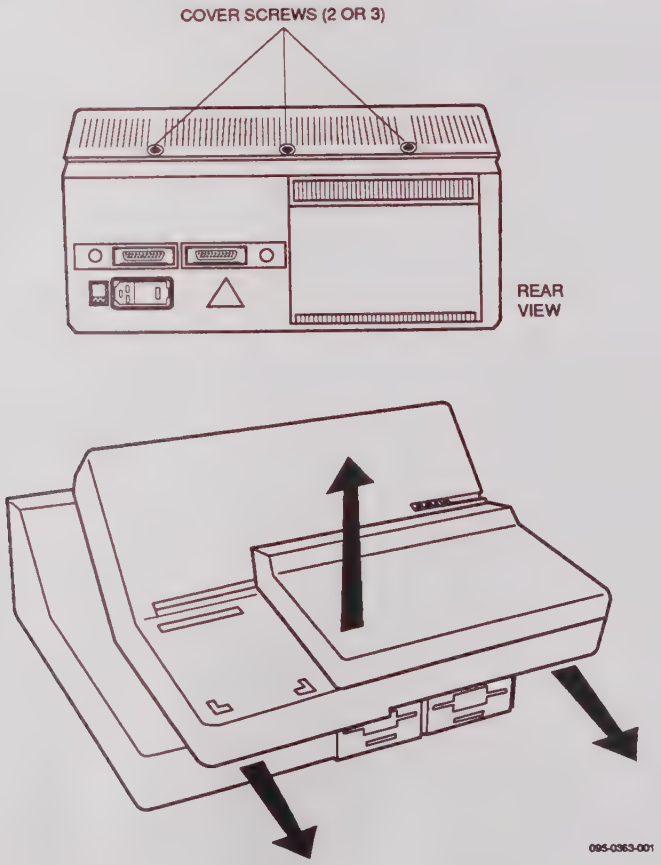
If your UniSite was shipped with a dummy FSM (Function Specific Module) installed, you must first remove the top cover and the dummy FSM, then replace the top cover before installing the PinSite module.

Dummy FSM Removal

WARNING: To avoid electrical shock, disconnect the power cord before removing the top cover. Do not reconnect the power cord until the top cover has been re-installed.

1. Place the UniSite onto an antistatic workstation. You should also place the disassembly tools onto this workstation.
2. Turn off UniSite's power switch.
3. Remove any front panel PSM (Package Specific Modules) that may be installed.
4. Remove the power cord from UniSite's back panel.
5. Using a screwdriver, remove the top cover screws (see Figure 2-2).

Figure 2-2
Top Cover Removal



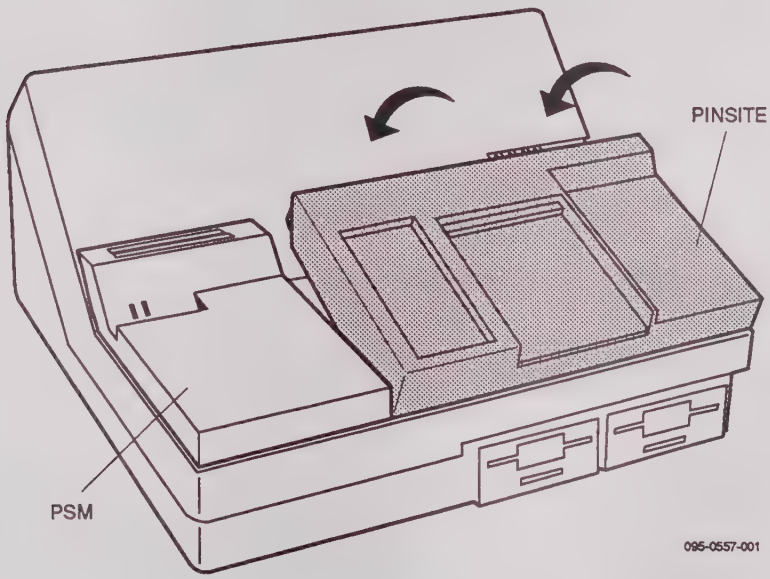
6. Remove the top cover by first sliding it toward the front (about 1/4"), then lifting the cover straight up.
7. Turn the top cover over and remove the two screws that attach the dummy FSM to the cover.
8. Replace the top cover on the UniSite.

PinSite Installation

Follow the steps below to install the PinSite Module into your UniSite.

1. Insert the two retainer hooks on the bottom of the PinSite Module into the two right slots on the top of the UniSite.
2. Slowly lower the back of the module until the module connector touches its mating connector on top of the UniSite. (See Figure 2-3.)
3. To ensure complete contact, firmly press down on the rear of the module.

Figure 2-3
PinSite Installation



4. To remove the module, lift the rear of the module until the retaining hooks on the front of the module are disengaged from the slots on the top of the UniSite.

Base Into PinSite

The PinSite module is designed to accept one Base at a time. The Base serves as the interface between the device and the PinSite Module. Bases are available with Matchbook technology for PLCC, LCC and SOIC devices or with Zero Insertion Force (ZIF) sockets as used on the PGA Base. The following instructions show how to install a PLCC Base into the PinSite Module, although the installation procedure applies to all Bases.

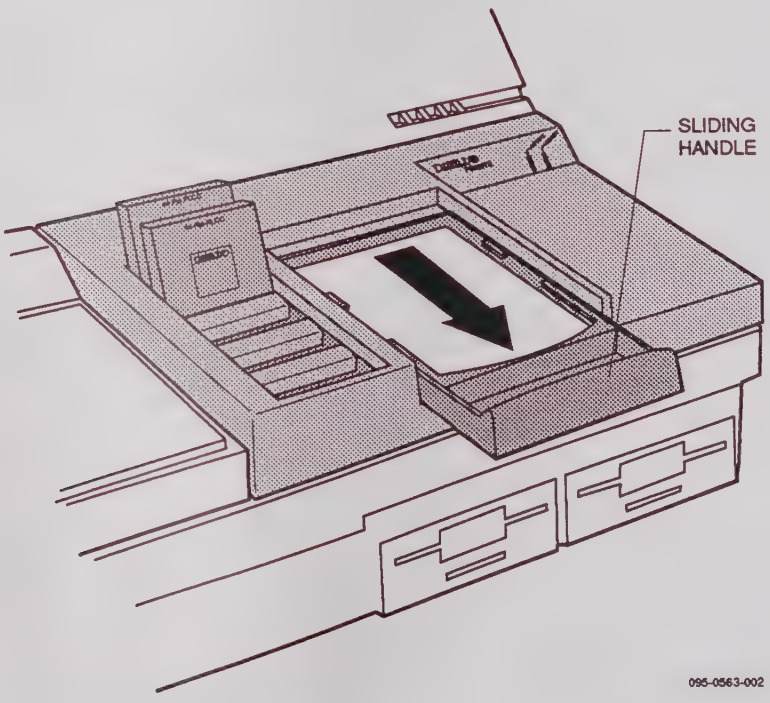
Note: You can install and remove a Base with the power on as long as you are NOT performing a device operation.

1. Position the UniSite so the disk drive slots are facing toward you.
2. Examine the Base receptacle opening. It has a sliding handle on the front half. As shown in Figure 2-4, pull the sliding handle toward you until the handle stops. Do not remove the handle.

CAUTION: ***Do not insert a foreign object into the Base receptacle opening. Also, do not touch any of the gold pins in the Base receptacle opening. Pressing or touching the pins may cause the pins to stick and will cause operational problems.***

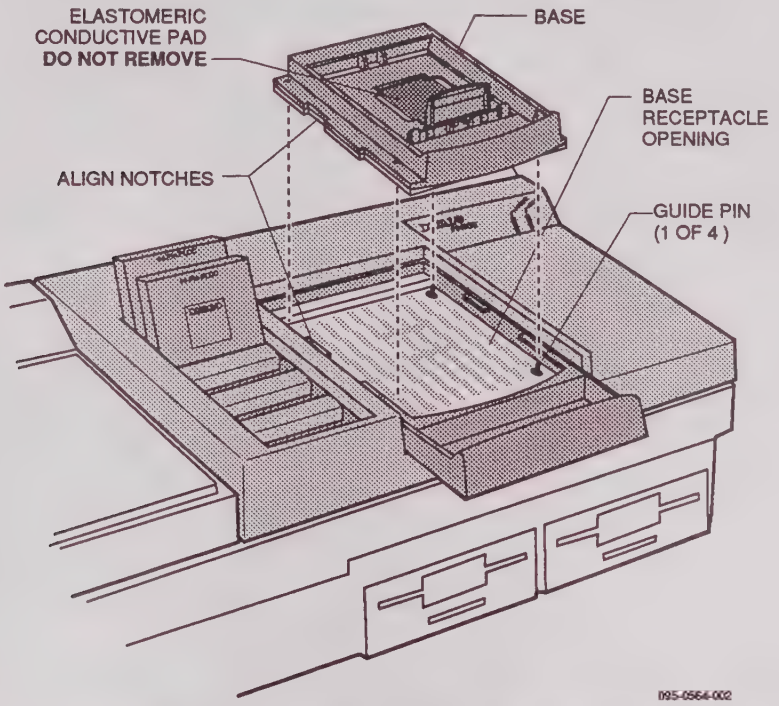
If the pins do get stuck, call your nearest Data I/O Customer Support Office for more information.

Figure 2-4
Base Receptacle Opening



3. As shown in Figure 2-5, remove the protective cover and align the notches on the Base with the notches in the opening.

Figure 2-5
Aligning the Base



4. Insert the Base into the opening, making sure the four guide pins in the Base opening line up with the holes in the Base.
5. Finally, squeeze the Base and module handles together, locking the Base in place. You do not need to use excessive force when compressing the handles.

Elastomeric Pad

A conductive pad, shown in Figure 2-5, is placed on the PLCC base which makes electrical connections between the device and the base.

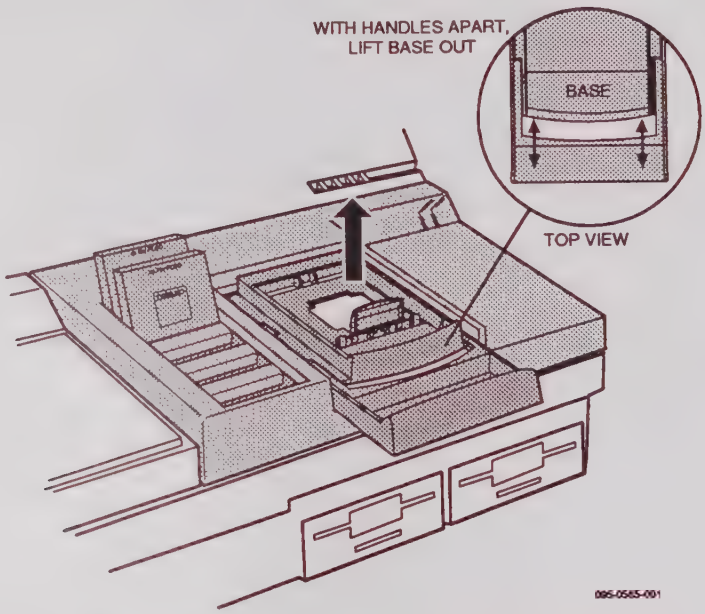
Do not remove this conductive pad. It is required to make proper connection between the programmable device pins and the base unit circuit board. The only time you would remove the pad is if you are replacing an old pad with a new one. See Chapter 3 for more information on conductive pad care.

Removing a Base

You must apply even pressure while moving the handles apart. If you exert uneven pressure on the handles, they may jam in the tracks. Apply an even force to realign the handles. To remove a Base, follow the steps below.

1. Separate the handles as shown in Figure 2-6 with your thumbs and fingers. Push back on the Base handle with both thumbs while pushing forward on the sliding PinSite handle with your fingers.

Figure 2-6
Removing a Base From PinSite



2. Lift the Base up and out of PinSite. Store the Base in the storage container you received with your PinSite.

MatchBook into Base

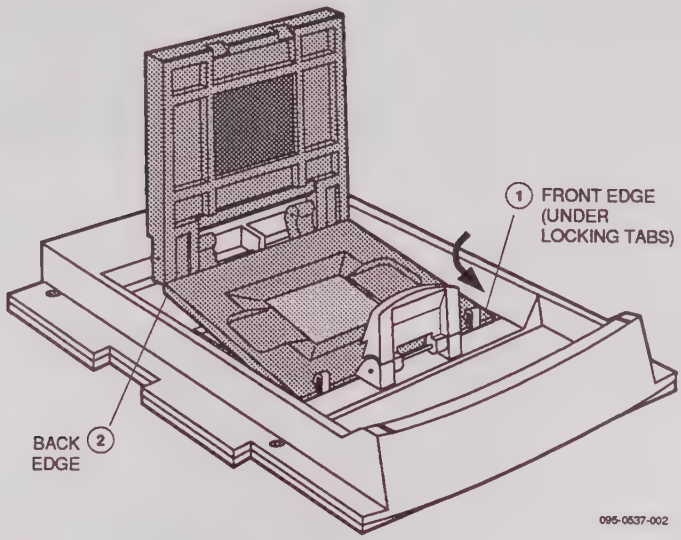
The MatchBook accommodates the PLCC, LCC, and SOIC package types and holds the device in place on the Base. When the device is locked in place, the conductive pad on the Base forms a conductive path between the pin drivers and the device in the MatchBook.

The instructions below explain how to install and remove a MatchBook. Although the illustrations show a PLCC MatchBook, the procedure is the same for LCC and SOIC MatchBooks.

1. Select a Base and insert it into PinSite. Lock the Base into place.
2. Select the MatchBook according to the package type (PLCC, LCC, or SOIC) and pinout (20 pins, 28 pins etc.). We recommend that PLCC parts be used with the PLCC MatchBook only.

3. As shown in Figure 2-7, insert the MatchBook into the Base with the MatchBook open 90 degrees. First set the front edge of the MatchBook onto the Base under the two locking tabs at the front edge of the Base opening. Then lower the back edge of the MatchBook into place on the Base.

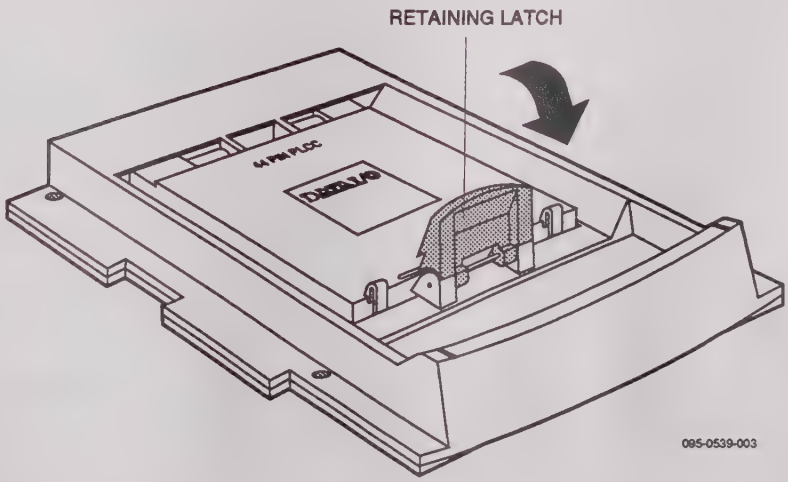
Figure 2-7
Inserting a MatchBook into the PLCC and LCC or SOIC Base



4. Insert a device into the MatchBook. Insertion instructions vary according to package type. For more information on inserting PLCC and LCC devices see the section titled "PLCC and LCC Device into MatchBook." SOIC device insertion is described in the next section. For more information on inserting PGA devices, see the section titled "PGA Device into PGA Base."

5. Close the MatchBook by pressing down on the top of the MatchBook. When the top of the MatchBook is down far enough, the retaining latch will snap into place as shown in Figure 2-8.

Figure 2-8
Closing the MatchBook



Opening/Removing a MatchBook

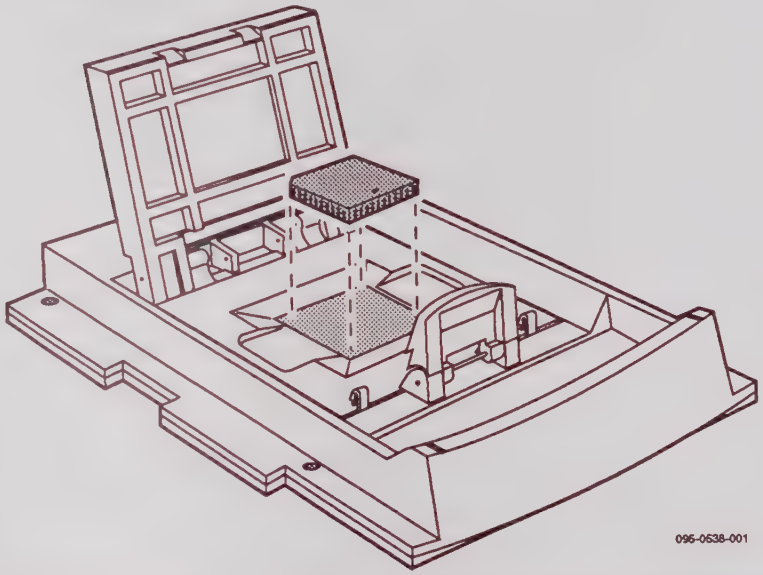
To open a MatchBook unsnap the retaining latch. To remove a MatchBook, open the MatchBook and lift the MatchBook out of PinSite.

PLCC and LCC Device into a MatchBook

Use the following procedure to insert a PLCC and LCC device into a MatchBook.

1. Select and insert the appropriate MatchBook into the PLCC and LCC Base. For example, select the 44-pin PLCC MatchBook for a 44-pin PLCC device.
2. Position the PLCC and LCC device so that pin 1 is at the center bottom as you view it from the top. Figure 2-9 illustrates the proper positioning of a PLCC and LCC device.

Figure 2-9
Inserting a Device into the PLCC and LCC Base



3. Insert the PLCC and LCC device into the open MatchBook. Make sure the center bottom locating dot on the device is properly aligned with the locating dot on the MatchBook.
4. Close the MatchBook until the retaining latch snaps into place.

SOIC Device into a MatchBook

Use the following procedure to insert an SOIC device into the SOIC MatchBook. Before you go any further, make sure you have the SOIC Base properly installed in PinSite.

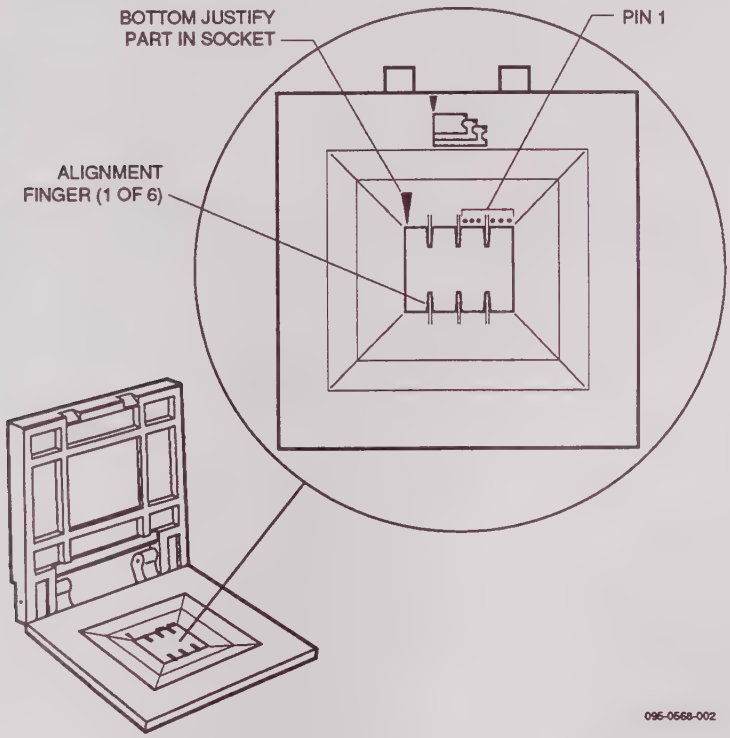
1. Position the SOIC device so that pin 1 is up and to the right as you view it from the top.

2. Insert the SOIC device into the open MatchBook. Make sure the SOIC device is flush against the left-hand side of the MatchBook. Also make sure that the device is positioned between the six alignment fingers and not on top of them.

   If the size of the SOIC device is smaller than 32 pins, the device should be left justified. The unused portion of the socket will be on the right as you view it from the top.

The small, round dots along the top of the opening, as shown in Figure 2-10, indicate the location of pin 1 for the various sizes of SOIC devices the SOIC MatchBook will accept.

Figure 2-10
SOIC Device Insertion



PGA Device into PGA Base

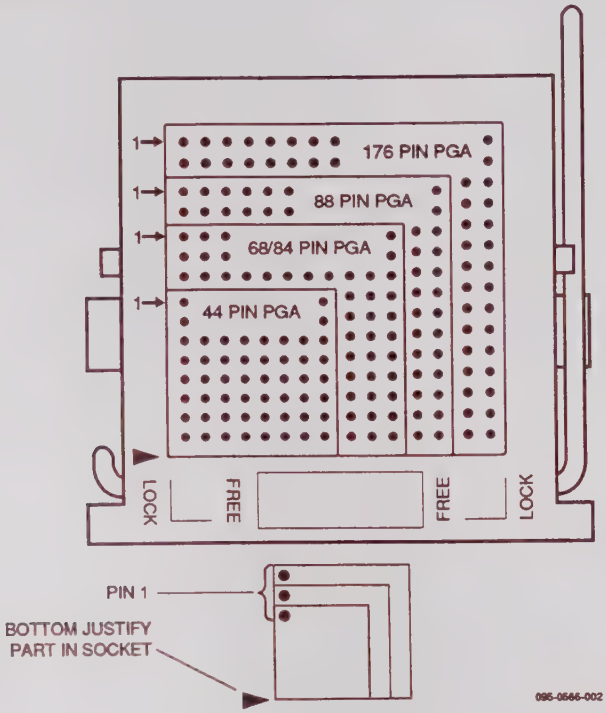
The PGA Base can accommodate PGA packages up to 15 x 15 pin arrays. When you insert a PGA device into the PGA Base, pay particular attention to the orientation and positioning of the device.

1. Install the PGA Base into PinSite. Unlock the PGA socket by lifting up on the socket lever.

2. Insert the device into the PGA socket. Make sure the PGA device is bottom justified and that pin 1 of the device is against the left side of the socket. Figure 2-11 shows the proper alignment of a PGA device.

3. Push the socket lever down to lock the PGA device into the PGA socket.

Figure 2-11
PGA Device Orientation



3 Operation

If you want to program devices that are programmable with the PinSite Module, the PinSite Module must first be installed in the UniSite. See the section "PinSite Module into UniSite" in chapter 2 for installation instructions.

If the PinSite Module is installed in UniSite at power up, one of the following messages will appear on the first UniSite screen:

```
FSM: PinSite V01 w LCC/PLCC Base
```

```
FSM: PinSite V01 w PGA Base
```

```
FSM: PinSite V01 w SOIC Base
```

```
FSM: PinSite V01 w unknown Base
```

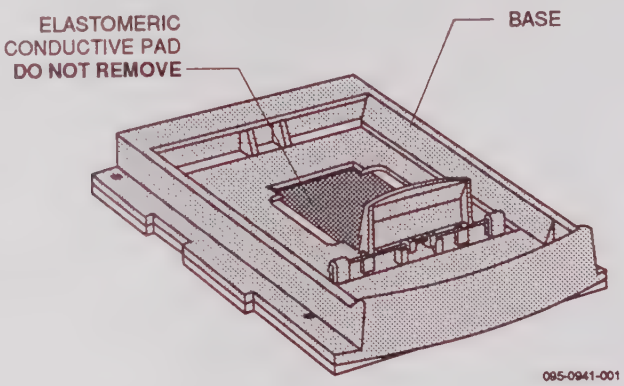
Unknown Base can mean either no Base has been installed or an unidentified Base has been installed. This may mean that your software needs to be updated to support a new type of Base or there is a problem with your PinSite.

Elastomeric Pad Care

The elastomeric conductive pad is a key element in the Matchbook technology. The conductive pad has an array of small filaments that are embedded into the pad. These filaments are oriented parallel to the Z axis of the pad in order to make an electrical connection between the programmable device pins and the base unit circuit board. See Figure 3-1.

It is important to keep this pad free of dirt or contamination to ensure good contact between the programmable device pins and the pad. The pad should be inspected and cleaned as needed; we recommend approximately every 1000 insertions or once a month. It is normal for the pad to show signs of discoloration as it is used.

Figure 3-1
Conductive Pad



Properly maintained pads will ensure reliable performance for over 10,000 insertions for each package size 20 to 84 pins.

Pad Cleaning

The conductive pad can be cleaned of debris by blowing air over the pad. If compressed air is used, direct the air stream from the front or back of the base adapter. Avoid air streams from the side of the pad, this could lift the pad off the circuit board. To further clean the pad, apply a small amount of denatured alcohol on a cotton swab and gently wipe off the pad to dislodge dirt. Make sure that the pad is clear of any filament left over from the cleaning process.

WARNING: Do not use any petroleum or freon based products to clean the pad. These substances will cause premature deterioration of the pad material.

Replacement Pad Kits

Replacement pads are available for the PLCC, LCC, and SOIC bases in kits of 1 or 5 pads. Contact Data I/O Customer Support for ordering information.

4 Messages

Install ChipSite or PinSite with PLCC and LCC Base

A device operation was attempted on a device that can be programmed on a PinSite module with a PLCC and LCC Base or on a ChipSite, but neither module has been installed.

Install PinSite with PGA Base

A device operation was attempted on a device that can be programmed on the PinSite module with a PGA Base, but that module has not been installed.

Install ChipSite or PinSite with SOIC Base

A device operation was attempted on a device that can be programmed on a PinSite module with an SOIC Base or on a ChipSite, but neither module has been installed.

Install PinSite with PLCC and LCC Base

A device operation was attempted on a device that can be programmed on the PinSite module with a PLCC and LCC Base, but the module has not been installed.

Install PinSite with SOIC Base

A device operation was attempted on a device that can be programmed on a PinSite module with an SOIC Base, but the module has not been installed.

Install PLCC and LCC Base

A device operation was attempted on a device that can be programmed on a PinSite module with a PLCC and LCC Base, but only the PinSite module has been installed. There is either no Base installed or the wrong Base is installed.

Install PGA Base

A device operation was attempted on a device that can be programmed on a PinSite module with a PGA Base, but only the PinSite module has been installed. There is either no Base installed or the wrong Base has been installed.

Install SOIC Base

A device operation was attempted on a device that can be programmed on a PinSite module with an SOIC Base, but only the PinSite module has been installed. There is either no Base installed or the wrong Base has been installed.

DATA I/O

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